

Appl. No. 09/960,530  
 Amdt. dated September 7, 2004  
 Reply to Office Action of April 5, 2004

PATENTAmendments to the Claims:

This listing of claims will replace all prior versions, and listings of claims in the application:

Listing of Claims:

1 I. (Currently Amended) A method ~~method~~ for operating a solid oxide fuel  
 2 cell battery [(1)], in which an integrity state of the battery is determined by means of  
 3 measurement of operating parameters and programmed evaluation of the measurement data and  
 4 the battery is controlled for the purpose of reliable operation in such a manner that the maximum  
 5 electrical output power is subjected to a limitation which is dependent on the integrity state or an  
 6 interruption of the operation is initiated, with the integrity state being characterizable by at least  
 7 two parameters, ~~in particular a parameter pair~~  $c_j, d_j$ , so that from a relationship which contains  
 8 the parameters an internal electrical resistance ( $R_i$ ) of the battery can be calculated ~~on the one~~  
 9 ~~hand~~ and a statement on the quality of the battery can be derived ~~on the other hand~~ wherein the  
 10 battery comprises a chamber in which reaction gases are burned after passage through the fuel  
 11 cells; and wherein at least one sensor is used in this chamber in order to monitor the presence of  
 12 a flame, with a measurement signal being produced in the sensor as a result of physical  
 13 properties of the flame.

1 2. (Currently Amended) A method ~~method~~ in accordance with claim 1,  
 2 wherein the physical properties of the flame are characterized in that the battery comprises a  
 3 chamber [(30)] in which reaction gases (51, 52) are burned after passage through the fuel cells;  
 4 and [(in that)] at least one sensor (31) is used in this chamber in order to monitor the presence of a  
 5 flame, with a measurement signal being produced in the sensor as a result of physical properties  
 6 of the flame, in particular of a production of heat at the flame temperature or an emission of  
 7 photons.

1 3. (Currently Amended) A method ~~Method~~ in accordance with claim 1,  
 2 wherein characterized in that a mathematical relationship (II) exists between the internal

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3 resistance ( $R_i$ ) and an amount of fuel (QF) which is fed into the battery; and wherein ~~in that~~ the  
 4 parameters  $c_j$ ,  $d_j$  enter into this relationship as proportionality factor or as exponent, respectively.

1 4. (Currently Amended) A method ~~Method~~ in accordance with claim 1,  
 2 wherein the physical properties of the flame are characterized in that ~~characterized in that~~ current values of the  
 3 parameter pair  $c_j$ ,  $d_j$  are determined by means of periodically carried out diagnostic  
 4 measurements and by carrying out digital computations ( $IV - X''$ ); and wherein ~~in that~~ as a result  
 5 of these values the control of the battery is adapted where appropriate; ~~or in that, depending on~~  
 6 ~~the integrity state, a message is displayed that a replacement of the fuel cells is required.~~

1 5. (Currently Amended) A method ~~Method~~ in accordance with claim 4,  
 2 wherein ~~characterized in that~~ a table of values of the parameter pair  $c_j$ ,  $d_j$  is determined on the  
 3 basis of a collective of batteries ~~(1)~~ having a broad spectrum of different integrity states ( $j$ ); and  
 4 ~~in that~~ wherein these values are used in the control instead of the values which are determined by  
 5 the diagnostic measurements, with a minimum deviation of the results of the diagnostic  
 6 measurement being aimed for by means of a predetermined criterion ( $IX - X''$ ).

1 6. (Currently Amended) A method ~~Method~~ in accordance with claim 5,  
 2 wherein ~~characterized in that~~ a request for the interruption of the operation is indicated by the  
 3 system control ~~(8)~~ in the event that the minimum deviation in accordance with the predetermined  
 4 criterion ( $IX - X''$ ) does not exist.

1 7. (Currently Amended) A method ~~Method~~ in accordance with claim 2,  
 2 wherein ~~characterized in that~~ the monitoring of the afterburning is carried out by means of a  
 3 thermo-generator ~~(31)~~.

1 8. (Currently Amended) A method ~~Method~~ in accordance with claim 2,  
 2 wherein ~~characterized in that~~ the monitoring of the afterburning is carried out by means of a  
 3 UV probe ~~[(31)]~~ or an ionization measurement.

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1                    9. (Currently Amended)    A method ~~Method~~ in accordance with claim 2,  
2    wherein characterized in that the monitoring of the afterburning is carried out by means of a CO  
3    sensor which is arranged in the exhaust gas flow.

1                    10. Cancel.

1                    11. (New)    A method in accordance with claim 4 wherein depending upon the  
2    integrity state, a message is displayed that a replacement of the fuel cells is required.